

CLAIMS

1. A method for performing, for the benefit of a reference provider (ISP) (10) having a set of users (C), connectivity evaluations over a data communication  
5 network, said evaluations being made in relation to at least one provider (ISP) of interest (12, 14), characterised in that it includes the steps of:

- selecting a plurality (T) of autonomous systems (AS) capable of forming at least one between a traffic  
10 source and a traffic destination for the users (C) of said reference provider (10) through the same reference provider (10).

- supplying tables of BGP type (BGP1, ..., BGPm) containing information on paths available on said data  
15 communication network for the routing of said traffic with regard to the autonomous systems (AS) of said plurality,

- extracting (104) from said tables the paths of BGP type inherent to said at least one provider of interest  
20 (12, 14), by finding out the paths that contain the respective number of autonomous system (AS number) for said at least one provider of interest (12, 14),

- extracting (112) for each autonomous system (AS) of said plurality (T), oriented sub-paths between each  
25 said autonomous system (AS) and said at least one provider of interest (12, 14), by identifying for each sub-path the relating number of hops,

- identifying, for each autonomous system (AS) of said plurality (T), at least one between the forward  
30 traffic volume (FI) and the backward traffic volume (DI) with regard to the users (C) of said reference provider (10),

- determining (112), for each of said sub-paths respective connectivity contributions as a function of

said relative number of hops and of said at least one traffic volume (FI,DI),

- determining (118), for each autonomous system (AS) of said plurality, the total connectivity values  
5 accumulating the connectivity contributions determined for the oriented sub-paths extracted for said each autonomous system (AS), and

- accumulating the total values of connectivity determined for the autonomous systems (AS) of said  
10 plurality, so as to obtain total connectivity values relating to said at least one provider (ISP) of interest (12, 14).

2. The method according to claim 1 wherein the steps are carried out for a plurality (ASB) of providers (ISP)  
15 of interest (12, 14) present on said data communication network.

3. The method as recited in claim 2, characterised in that it comprises the step of sorting the values of total connectivity obtained for the providers of  
20 interest (12, 14) of said plurality in at least one sorted list (figure 6, figure 7).

4. The method as recited in any of the claims 1 to 3, characterised in that it comprises the steps of:

- identifying, for each autonomous system (AS) of  
25 said plurality (T), both the forward traffic volume (FI), and the backward traffic volume (DI) with regard to the users (C) of said reference provider (10), and

- determining (112), for each of said sub-paths, respective contributions of connectivity as a function  
30 of said relating number of hops and of both said volumes of forward traffic (FI) and backward traffic (DI).

5. The method as recited in claim 4, characterised in that it comprises the step of generating values of total connectivity for said at least one provider (ISP)

of interest (12, 14) disaggregated into values of total connectivity for forward traffic (figure 7) and backward traffic (figure 6).

6. The method as recited in any of the previous  
5 claims, characterised in that it comprises the step of submitting said tables of BGGP type (BGP1, ..., BGPm) to a clean-up operation (CL1, ..., CLm) to eliminate the comments contained in said tables

7. The method as recited in any of the claims 1 to 6  
10 characterised in that it comprises the step of detecting said traffic volumes through a function (CF) of NetFlow™ type.

8. The method as recited in claim 2 or claim 3,  
characterised in that it additionally comprises the step  
15 of selectively reallocating the transit traffic through said reference provider (10) on at least one part of said providers(ISP) of interest (12, 14) of said plurality (ASB).

9. A system for performing for the benefit of a  
20 reference provider (ISP) (10) having a set of users (C), connectivity evaluations on a data communication network, said evaluations being performed in relation to at least one provider (ISP) of interest (12, 14), characterised in that it comprises:

25 - tables of BGP type (BGP1, ..., BGPm) containing information on paths available on said data communication network for the routing of traffic with regard to a plurality (T) of autonomous systems (AS) capable of establishing at least one between a source  
30 and a destination of traffic for the users (C) of said reference provider (10) through the same reference provider (10),

- a detection module (CF) for detecting, for each autonomous system (AS) of said plurality (T), at least

one between the forward traffic volume (FI) and the backward traffic volume (DI) with regard to the users (C) of said reference provider (10), and

- a processing module (S) configured for:

5       - extracting (104) from said tables the paths of BGP type inherent to said at least one provider of interest (12, 14), by searching for the paths that contain the respective number of autonomous system (AS number) for said at least one provider of interest (12,  
10 14),

      - extracting (112), for each autonomous system (AS) of said plurality (T), oriented sub-paths between said each autonomous system (AS) and said at least one provider of interest (12, 14), identifying for each sub-  
15 path the relating number of hops,

      - determining (112), for each of said sub-paths, respective connectivity contributions as a function of said relating number of hops and of said at least one traffic volume (FI,DI) with regard to the users (C) of  
20 said reference provider (10),

      - determining (118), for each autonomous system (AS) of said plurality, the total connectivity values accumulating the connectivity contributions determined for the oriented sub-paths extracted for each said  
25 autonomous system (AS), and

      - accumulating the total values of connectivity determined for the autonomous systems (AS) of said plurality, so as to obtain values of total connectivity relating to said at least one provider (ISP) of interest  
30 (12, 14).

10. The system as recited in claim 9, configured for performing connectivity evaluations for a plurality (ASB) of providers (ISP) of interest (12, 14) present on said data communication network.

11. The system as recited in claim 10, characterised in that it comprises a sorting module for sorting the total connectivity values obtained for the providers of interest (12, 14) of said plurality in at least one  
5 sorted list (Figure 6, Figure 7).

12. The system as recited in any of the claims 9 to 11, characterised in that:

- said detection module (CF) is configured for detecting for each autonomous system (AS) of said  
10 plurality (T), both the forward traffic volume (FI) and the backward traffic volume (DI) with regard to the users (C) of said reference provider (10), and

- said processing module (S) is configured for determining (112), for each of said sub-paths,  
15 respective connectivity contributions as a function of said relating number of hops and of both said forward traffic volume (FI) and backward traffic volume (DI).

13. The system as recited in claim 12, characterised in that said processing module (S) is configured for  
20 generating total connectivity values for said at least one ISP of interest (12, 14), disaggregated into total forward connectivity values (Figure 7) and total backward connectivity values (Figure 6).

14. The system as recited in any of the previous  
25 claims 9 to 13, characterised in that it comprises pre-processing modules (CL1, ..., CLm) to submit said tables of BGP type (BGP1, ..., BGPm) to a cleanup operation (CL1, ..., CLm) to eliminate the comments contained in said tables.

30 15. The system as recited in any of the claims 9 to 14, characterised in that said detection module (CF) for detecting said at least one traffic volume, includes a function (CF) of NetFlow™ type.

16. The system as recited in claim 10 or in claim 11, characterised in that the providers of interest (12, 14) of said plurality are equipped with a selective re-balancing module for re-balancing the transit traffic 5 through said reference provider (10).

17. An information technology product, directly loadable on the internal memory of a digital computing unit and comprising portions of software codes capable of implementing the method according to any of the 10 claims 1 to 8, when the product is run on a computer.